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EXAMINER
HOANG, HIEU T

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/789,585	GUO ET AL.
	Examiner	**Art Unit**	
	HIEU T. HOANG	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS,
> WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
>   after SIX (6) MONTHS from the mailing date of this communication.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
>   Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
>   earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _02 May 2008_.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-20 and 22-29_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-20 and 22-29_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _01/07/08_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/02/2008 has been entered.

2.   Claims 1-20 and 22-29 are pending.

Response to Arguments

3.   Applicant's arguments have been fully considered but they are unpersuasive.

4.   Applicant argues that the prior art does not teach delivering action messages in an order of increasing reaction time <u>without</u> clock synchronization among said game server and said players. The examiner respectfully disagrees. In the specification, applicant describes clock synchronization related to <u>physical time</u> or physical clocks (page 5 lines 4-21). Therefore, in the claims, no clock synchronization inherently means no synchronization of physical clocks. Lim teaches delivering action messages in an order of increasing reaction time with the assumption of clock synchronization among said game server and said players (Lim, 1.1, par. 3 and footnote 1, fair ordering based on <u>real-time occurrence</u> which requires synchronized real-time <u>physical</u> clocks.) Lamport, on the other hand, teaches events can be ordered <u>without physical clocks</u> by introducing logical clocks (see page 559, Logical Clocks, especially par. 1, logical clocks

have no relation to physical time or actual timing mechanism, page 560, Ordering the

Events Totally). Therefore, it would have been obvious for one skilled in the art at the

time of the invention to modify the system of Lim's by ordering events (or reaction times)

using logical clock concept of Lamport instead of using real-time or physical clocks and

therefore avoid the need of physical clock synchronization.

Claim Rejections - 35 USC § 101

5.　　　35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent therefor,
> subject to the conditions and requirements of this title.

6.　　　Claims 22-27 are rejected under 35 U.S.C. 101 the claimed invention is directed

to non-statutory subject matter. A system including computer readable code per se is a

software system, and is therefore non-statutory subject matter.

Claim Rejections - 35 USC § 112

7.　　　The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

8.　　　Claims 22-27 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. The claims recite a system comprising code or

instructions comprising steps. It is vague whether the applicant intends to claim a

method or a machine. If the system is a machine, no physical component of the

machine can be found in the claim bodies. Correction is required.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

10.   This office action contains multiple ground(s) of rejections. Applicant is reminded

to review each ground of rejection separately.

First rejection

11.   Claims 1-20, 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lin et al. (Sync-MS: Synchronized Messaging Service for Real-Time Multi-Player

Distributed Games, hereafter Lin), in view of Lamport (Time, Clocks, and the Ordering

of Events in a Distributed System).

12.   For claim 1, Lin discloses a method of providing a fair exchange of messages to

players of a distributed multi-player game taking place over a communications network

(title, abstract), said method comprising the steps of:

utilizing a multi-player game server that generates update messages to said players and receives action messages from said players (introduction, par. 2, game server sends update messages to players and receives action messages from the players);

delivering said action messages for processing by said game server in an order of increasing reaction time (fig. 2, p. 3, col. 2, par. 2, sync_in, the SMS or sync-MS server delivers A2 action message before A1 action message, since player 2 reacts faster), reaction time being a difference between reception of an update message by a player and a sending of an action message by said player in response to said update message (fig. 2, p. 3, col. 2, par. 2, sync_in, time between the arrival of update message and sending out of action message at the player, fig. 3, delta time periods are reaction times).

Lin uses synchronized clocks at said game server and said players because Lin implements player action fairness or fair order based on real time occurrence or physical clocks requiring physical clock synchronization (1.1, par. 3). Lin does not disclose that fair order is without clock synchronization among said game server and said players.

However, Lamport discloses ordering of gaming events can be done using logical clocks without using physical clocks of the server and players (pages 558-562, the partial ordering, par. 1, page 560, par. 1, ordering of events using the partial ordering method employing logical clocks)

Therefore, it would have been obvious for one skilled in the art at the time of the invention to modify the system of Lim's by ordering events (or reaction times) using logical clock concept of Lamport instead of using real-time or physical clocks and therefore avoid the need of physical clock synchronization.

13.   For claim 2, Lin-Lamport discloses the invention as in claim 1. Lin-Lamport further discloses a game server proxy is operable in connection with said game server for receiving and ordering of said action messages and forwarding said action messages to said game server (Lin, fig. 2, SMS, sync-MS-server).

14.   For claim 3, Lin-Lamport discloses the invention as in claim 2. Lin-Lamport further discloses each action message received at said game server proxy is delayed until a computed delivery time is reached to ensure fair processing of the action messages sent from all players (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, last 2 lines, mark 2 shows added delay to ensure that faster reaction will get to the server first).

15.   For claim 4, Lin-Lamport discloses the invention as in claim 2. Lin-Lamport further discloses said server proxy associates a message number with the update messages sent to said players thereby tracking an update message to which an action message responds (Lin, fig. 2, update messages U1, U2).

16.   For claim 5, Lin-Lamport discloses the invention as in claim 2. Lin-Lamport further discloses said server proxy records a sending time for an update message and associates said update message with a sending time (Lin, fig. 2, sending times of U1 and U2 are recorded).

17.   For claim 6, Lin-Lamport discloses the invention as in claim 2. Lin-Lamport
further discloses a player proxy is operable in connection with said game server for
receiving said update messages from said game server and forwarding said update
messages to said game players, and for receiving said action messages from said
game players and forwarding said action messages to said game server (Lin, fig. 2,
SMS or proxy server and SMCs receive update messages from game server and
forwards to players, and receives action messages from the players and forwards to the
game server).

18.   For claim 7, Lin-Lamport discloses the invention as in claim 6. Lin-Lamport
further discloses a player proxy records reception time of an update message and uses
said reception time to calculate said reaction time once action message is sent by a
player (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, calculating reaction time).

19.   For claim 8, Lin-Lamport discloses the invention as in claim 6. Lin-Lamport
further discloses said player proxy sends an update message number, reaction time
and action message number with an action message (Lin, fig. 2, Ui, update message
number, Ai, action message number, fig. 4).

20.   For claim 9, Lin-Lamport discloses the invention as in claim 6. Lin-Lamport
further discloses a message split mechanism is employed at said player proxy when
multiple update messages are outstanding (Lin, fig. 4, section 6.1.1, par. 1 and 2,
multiple Ui arrives at SMC), each action message associated with a window of update
messages, a reaction time being calculated for each action message with respect to
each said outstanding update message (Lin, fig. 4, section 6.1.1, par. 1 and 2, during

bar 2, respective update message of Ai, or rum(Lin, Ai) corresponds to the outstanding update message).

21.   For claim 10, Lin-Lamport discloses the invention as in claim 3. Lin-Lamport further discloses the wait timeout period is calculated by some multiple of the expected round trip time between said server proxy and player proxy (Lin, 5.1, MaxWait, par. 1).

22.   For claim 11, Lin-Lamport discloses the invention as in claim 1. Lin-Lamport further discloses an appropriate delivery time formula for an action message is utilized depending on whether action messages arrive in order and within their wait timeout periods, action messages arrive out of order but within their wait timeout periods (Lin, 5.1, par. 1, considering received and delivered all action messages sent to it from any SMC earlier than s(H)), or action messages arrive outside their wait timeout periods (Lin, 5.1, MaxWait, algorithm considers the message too late to be processed in a first order).

23.   For claim 12, Lin-Lamport discloses the invention as in claim 2. Lin-Lamport further discloses said server proxy (Lin, fig. 2, SMS), when an action message is received, computes a position in a queue where said action message should be inserted and a local delivery time at which said message is to be delivered to said game server (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, SMS determines wait time mark 2 to deliver action message to the game server).

24.   For claim 13, Lin-Lamport discloses the invention as in claim 12. Lin-Lamport further discloses said delivery queue is kept sorted based on message number and

reaction time, respectively (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, deliver action

messages based on increasing order reaction time of players).

25.   For claim 14, Lin-Lamport discloses the invention as in claim 11. Lin-Lamport

further discloses the delivery time of an action message at a server proxy is calculated

before being inserted to a delivery queue (Lin, fig. 3, delivery time of A2 is calculated

and put in a ready queue to be sent to the game server), and recalculated upon new

action message arrival when messages arrive in order or out of order but within their

wait timeout periods (Lin, 5.1, par. 1, algorithm considering whether earlier messages

arrived and delivered in or out of order).

26.   For claim 15, Lin-Lamport discloses the invention as in claim 11. Lin-Lamport

further discloses action message numbers are used by a server proxy when messages

arrive out of order to order messages from a specific player and to determine whether

all earlier messages sent by said player have arrived (Lin, fig. 3, action message has an

index i, e.g. Ai).

27.   For claim 16, Lin-Lamport discloses the invention as in claim 11. Lin-Lamport

further discloses delivery time of an action message at a server proxy is calculated

before being inserted to the delivery queue (Lin, fig. 3, delivery time of A2 is calculated

and put in a ready queue to be sent to the game server), and recalculated upon new

action message arrival and action message delivery when messages arrive outside of

the wait timeout period (Lin, 5.1, par. 2, too late to be processed in a fair order).

28.   For claim 17, Lin-Lamport discloses the invention as in claim 6. Lin-Lamport

further discloses when action messages are sent by players (Lin, fig. 3, action

messages Ai), a set of tuples are tagged onto each of the action messages by their

proxies each representing the reaction time from the time a set of update messages are

received (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, each action message delivery time is

based on reaction time of players), wherein a window for which this information needs

to be sent is indicated by the server proxy when it sends an update message (Lin,

section 5, last par., waiting period enforced by the SMS)

29.   For claim 18, Lin-Lamport discloses the invention as in claim 6. Lin-Lamport

further discloses a window of update messages for which reaction times are needed is

indicated by the server proxy to the player proxies, the window being based on the

determination by the server proxy about when to stop accepting action messages

corresponding to a particular update message (Lin, section 5, last par., waiting period

enforced by the SMS).

30.   For claim 28, Lin-Lamport discloses the invention as in claim 3. Lin-Lamport

further discloses said delivery time is based on a given wait timeout period (Lin, 5.2,

SelectWait).

31.   For claim 29, Lin-Lamport discloses the invention as in claim 12. Lin-Lamport

further discloses an action message being inserted into multiple queues corresponding

each to a respective update message in its window (Lin, fig. 4, 6.1, par. 1, each action

message is associated with a update message)

32.   For claim 22, Lin discloses a system including computer readable code including

instructions for use by a server operating in connection with a distributed multi-player

game, said instructions providing a fair exchange of messages to players of a distributed multi-player game taking place over a communications network and comprising the steps of:

generating update messages to said players and receiving action messages from said players by way of said server (introduction, par. 2, game server sends update messages to players and receives action messages from the players);

delivering said action messages for processing by said game server in an order of increasing reaction time (fig. 2, p. 3, col. 2, par. 2, sync_in, the SMS or sync-MS server delivers A2 action message before A1 action message, since player 2 reacts faster), reaction time being a difference between reception of an update message by a player and a sending of an action message by said player in response to said update message (fig. 2, p. 3, col. 2, par. 2, sync_in, time between the arrival of update message and sending out of action message at the player).

Lin uses synchronized clocks at said game server and said players because Lin implements player action fairness or fair order based on real time occurrence or physical clocks (1.1, par. 3). Lin does not disclose that fair order is without clock synchronization among said game server and said players.

However, Lamport discloses ordering of gaming events can be done using logical clocks without using physical clocks (pages 558-562, the partial ordering, par. 1, page 560, par. 1, ordering of events using the partial ordering method employing logical clocks)

Therefore, it would have been obvious for one skilled in the art at the time of the invention to modify the system of Lim's by ordering events (or reaction times) using logical clock concept of Lamport instead of using real-time or physical clocks and therefore avoid the need of physical clock synchronization.

33. For claim 23, Lin-Lamport discloses the invention as in claim 22. Lin-Lamport further discloses code for use by player proxies of said multi-player game (Lin, fig. 2, SMC), said code being operable to:

receive an update message from said game server at a player proxy; record reception time of said update message at said player proxy (Lin, fig. 3, SMC receives U1 and records time of U1 arrival); and

calculate a reaction time using said reception time, said reaction time transmitted by a player in connection with an action message (Lin, fig. 3, reaction times are delta intervals).

34. For claim 24, Lin-Lamport discloses the invention as in claim 23. Lin-Lamport further discloses said player proxy sends an update message number, reaction time and action message number with an action message (Lin, fig. 3, update message Ui, delta interval or reaction time, action messages Ai).

35. For claim 25, Lin-Lamport discloses the invention as in claim 23. Lin-Lamport further discloses said reaction time is used by said multi-player game at said server proxy to order responses by said players to thereby provide said fair exchange of messages (Lin, fig. 3, section 5, par. 3, SMS server proxy enforces a wait time for delivery of action messages based on received information).

36.   For claim 26, the claim is rejected for the same rationale as in claim 11.

37.   For claim 27, the claim is rejected for the same rationale as in claim 12.

38.   For claim 19, Lin discloses a method of providing a fair exchange of messages to
players of a distributed multi-player game taking place over a communications network,
said multi-player game generating update messages to said players and receiving
action messages from said players, said method comprising the steps of:

      receiving an update message from said game server at a player proxy (fig. 2, p.
3, col. 2, par. 2, sync_in, proxy SMS receives update messages from game server);

      recording reception time of said update message at said player proxy (fig. 2, time
of arrival of update message Ui is recorded); and

      calculating a reaction time using said reception time, said reaction time
transmitted by a player in connection with an action message (fig. 2, p. 3, col. 2, par. 2,
sync_in, reaction time is calculated as the time difference between the arrival of Ui and
the departure of Ai at a player station, fig. 3, delta times).

      Wherein said reaction time is used by said multi-player game to order responses
by said players to thereby provide said fair exchange of messages (fig. 2, p. 3, col. 2,
par. 2, sync_in, deliver A2 first because player 2 has faster reaction time)

      Lin uses synchronized clocks at said game server and said players because Lin
implements player action fairness or fair order based on real time occurrence or
physical clocks (1.1, par. 3). Lin does not disclose that fair order is without clock
synchronization among said game server and said players.

However, Lamport discloses ordering of gaming events can be done using logical

clocks without using physical clocks (pages 558-562, the partial ordering, par. 1, page

560, par. 1, ordering of events using the partial ordering method employing logical

clocks)

Therefore, it would have been obvious for one skilled in the art at the time of the

invention to modify the system of Lim's by ordering events (or reaction times) using

logical clock concept of Lamport instead of using real-time or physical clocks and

therefore avoid the need of physical clock synchronization.

39.   For claim 20, Lin-Lamport further discloses said player proxy sends an update

message number, reaction time and action message number with an action message

(Lin, fig. 2, fig. 4).

Second rejection.

40.   Claims 1-20, 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lin et al. (Sync-MS: Synchronized Messaging Service for Real-Time Multi-Player

Distributed Games, hereafter Lin), in view of Watson Jr. et al. (US 4,633,421, hereafter

Watson).

41.   For claim 1, Lin discloses a method of providing a fair exchange of messages to

players of a distributed multi-player game taking place over a communications network

(title, abstract), said method comprising the steps of:

utilizing a multi-player game server that generates update messages to said

players and receives action messages from said players (introduction, par. 2, game

server sends update messages to players and receives action messages from the

players);

delivering said action messages for processing by said game server in an order

of increasing reaction time (fig. 2, p. 3, col. 2, par. 2, sync_in, the SMS or sync-MS

server delivers A2 action message before A1 action message, since player 2 reacts

faster), reaction time being a difference between reception of an update message by a

player and a sending of an action message by said player in response to said update

message (fig. 2, p. 3, col. 2, par. 2, sync_in, time between the arrival of update

message and sending out of action message at the player, fig. 3, delta time periods are

reaction times).

Lin uses synchronized clocks at said game server and said players because Lin

implements player action fairness or fair order based on real time occurrence or

physical clocks requiring physical clock synchronization (1.1, par. 3). Lin does not

disclose that fair order is without clock synchronization among said game server and

said players.

However, Watson discloses ordering of events can be done without clock

synchronization among the server and players (col. 1 lines 14-21, ordering of events at

remote locations when there are no synchronized clocks available)

Therefore, it would have been obvious for one skilled in the art at the time of the

invention to modify the system of Lim's by ordering events (or reaction times) using

event ordering with no clock synchronization of Watson therefore avoid the need of

physical clock synchronization.

42.   For claim 2, Lin-Watson discloses the invention as in claim 1. Lin-Watson further

discloses a game server proxy is operable in connection with said game server for

receiving and ordering of said action messages and forwarding said action messages to

said game server (Lin, fig. 2, SMS, sync-MS-server).

43.   For claim 3, Lin-Watson discloses the invention as in claim 2. Lin-Watson further

discloses each action message received at said game server proxy is delayed until a

computed delivery time is reached to ensure fair processing of the action messages

sent from all players (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, last 2 lines, mark 2 shows

added delay to ensure that faster reaction will get to the server first).

44.   For claim 4, Lin-Watson discloses the invention as in claim 2. Lin-Watson further

discloses said server proxy associates a message number with the update messages

sent to said players thereby tracking an update message to which an action message

responds (Lin, fig. 2, update messages U1, U2).

45.   For claim 5, Lin-Watson discloses the invention as in claim 2. Lin-Watson further

discloses said server proxy records a sending time for an update message and

associates said update message with a sending time (Lin, fig. 2, sending times of U1

and U2 are recorded).

46.   For claim 6, Lin-Watson discloses the invention as in claim 2. Lin-Watson further

discloses a player proxy is operable in connection with said game server for receiving

said update messages from said game server and forwarding said update messages to said game players, and for receiving said action messages from said game players and forwarding said action messages to said game server (Lin, fig. 2, SMS or proxy server and SMCs receive update messages from game server and forwards to players, and receives action messages from the players and forwards to the game server).

47.   For claim 7, Lin-Watson discloses the invention as in claim 6. Lin-Watson further discloses a player proxy records reception time of an update message and uses said reception time to calculate said reaction time once action message is sent by a player (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, calculating reaction time).

48.   For claim 8, Lin-Watson discloses the invention as in claim 6. Lin-Watson further discloses said player proxy sends an update message number, reaction time and action message number with an action message (Lin, fig. 2, Ui, update message number, Ai, action message number, fig. 4).

49.   For claim 9, Lin-Watson discloses the invention as in claim 6. Lin-Watson further discloses a message split mechanism is employed at said player proxy when multiple update messages are outstanding (Lin, fig. 4, section 6.1.1, par. 1 and 2, multiple Ui arrives at SMC), each action message associated with a window of update messages, a reaction time being calculated for each action message with respect to each said outstanding update message (Lin, fig. 4, section 6.1.1, par. 1 and 2, during bar 2, respective update message of Ai, or rum(Lin, Ai) corresponds to the outstanding update message).

50.   For claim 10, Lin-Watson discloses the invention as in claim 3. Lin-Watson

further discloses the wait timeout period is calculated by some multiple of the expected

round trip time between said server proxy and player proxy (Lin, 5.1, MaxWait, par. 1).

51.   For claim 11, Lin-Watson discloses the invention as in claim 1. Lin-Watson

further discloses an appropriate delivery time formula for an action message is utilized

depending on whether action messages arrive in order and within their wait timeout

periods, action messages arrive out of order but within their wait timeout periods (Lin,

5.1, par. 1, considering received and delivered all action messages sent to it from any

SMC earlier than s(H)), or action messages arrive outside their wait timeout periods

(Lin, 5.1, MaxWait, algorithm considers the message too late to be processed in a first

order).

52.   For claim 12, Lin-Watson discloses the invention as in claim 2. Lin-Watson

further discloses said server proxy (Lin, fig. 2, SMS), when an action message is

received, computes a position in a queue where said action message should be

inserted and a local delivery time at which said message is to be delivered to said game

server (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, SMS determines wait time mark 2 to

deliver action message to the game server).

53.   For claim 13, Lin-Watson discloses the invention as in claim 12. Lin-Watson

further discloses said delivery queue is kept sorted based on message number and

reaction time, respectively (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, deliver action

messages based on increasing order reaction time of players).

54.   For claim 14, Lin-Watson discloses the invention as in claim 11. Lin-Watson further discloses the delivery time of an action message at a server proxy is calculated before being inserted to a delivery queue (Lin, fig. 3, delivery time of A2 is calculated and put in a ready queue to be sent to the game server), and recalculated upon new action message arrival when messages arrive in order or out of order but within their wait timeout periods (Lin, 5.1, par. 1, algorithm considering whether earlier messages arrived and delivered in or out of order).

55.   For claim 15, Lin-Watson discloses the invention as in claim 11. Lin-Watson further discloses action message numbers are used by a server proxy when messages arrive out of order to order messages from a specific player and to determine whether all earlier messages sent by said player have arrived (Lin, fig. 3, action message has an index i, e.g. Ai).

56.   For claim 16, Lin-Watson discloses the invention as in claim 11. Lin-Watson further discloses delivery time of an action message at a server proxy is calculated before being inserted to the delivery queue (Lin, fig. 3, delivery time of A2 is calculated and put in a ready queue to be sent to the game server), and recalculated upon new action message arrival and action message delivery when messages arrive outside of the wait timeout period (Lin, 5.1, par. 2, too late to be processed in a fair order).

57.   For claim 17, Lin-Watson discloses the invention as in claim 6. Lin-Watson further discloses when action messages are sent by players (Lin, fig. 3, action messages Ai), a set of tuples are tagged onto each of the action messages by their proxies each representing the reaction time from the time a set of update messages are

received (Lin, fig. 2, p. 3, col. 2, par. 2, sync_in, each action message delivery time is based on reaction time of players), wherein a window for which this information needs to be sent is indicated by the server proxy when it sends an update message (Lin, section 5, last par., waiting period enforced by the SMS)

58.   For claim 18, Lin-Watson discloses the invention as in claim 6. Lin-Watson further discloses a window of update messages for which reaction times are needed is indicated by the server proxy to the player proxies, the window being based on the determination by the server proxy about when to stop accepting action messages corresponding to a particular update message (Lin, section 5, last par., waiting period enforced by the SMS).

59.   For claim 28, Lin-Watson discloses the invention as in claim 3. Lin-Watson further discloses said delivery time is based on a given wait timeout period (Lin, 5.2, SelectWait).

60.   For claim 29, Lin-Watson discloses the invention as in claim 12. Lin-Watson further discloses an action message being inserted into multiple queues corresponding each to a respective update message in its window (Lin, fig. 4, 6.1, par. 1, each action message is associated with a update message)

61.   For claim 22, Lin discloses a system including computer readable code including instructions for use by a server operating in connection with a distributed multi-player game, said instructions providing a fair exchange of messages to players of a

distributed multi-player game taking place over a communications network and
comprising the steps of:

generating update messages to said players and receiving action messages from
said players by way of said server (introduction, par. 2, game server sends update
messages to players and receives action messages from the players);

delivering said action messages for processing by said game server in an order
of increasing reaction time (fig. 2, p. 3, col. 2, par. 2, sync_in, the SMS or sync-MS
server delivers A2 action message before A1 action message, since player 2 reacts
faster), reaction time being a difference between reception of an update message by a
player and a sending of an action message by said player in response to said update
message (fig. 2, p. 3, col. 2, par. 2, sync_in, time between the arrival of update
message and sending out of action message at the player).

Lin uses synchronized clocks at said game server and said players because Lin
implements player action fairness or fair order based on real time occurrence or
physical clocks (1.1, par. 3). Lin does not disclose that fair order is without clock
synchronization among said game server and said players.

However, Watson discloses ordering of events can be done without clock
synchronization among the server and players (col. 1 lines 14-21, ordering of events at
remote locations when there are no synchronized clocks available)

Therefore, it would have been obvious for one skilled in the art at the time of the
invention to modify the system of Lim's by ordering events (or reaction times) using

event ordering with no clock synchronization of Watson therefore avoid the need of physical clock synchronization.

62.   For claim 23, Lin-Watson discloses the invention as in claim 22. Lin-Watson further discloses code for use by player proxies of said multi-player game (Lin, fig. 2, SMC), said code being operable to:

receive an update message from said game server at a player proxy; record reception time of said update message at said player proxy (Lin, fig. 3, SMC receives U1 and records time of U1 arrival); and

calculate a reaction time using said reception time, said reaction time transmitted by a player in connection with an action message (Lin, fig. 3, reaction times are delta intervals).

63.   For claim 24, Lin-Watson discloses the invention as in claim 23. Lin-Watson further discloses said player proxy sends an update message number, reaction time and action message number with an action message (Lin, fig. 3, update message Ui, delta interval or reaction time, action messages Ai).

64.   For claim 25, Lin-Watson discloses the invention as in claim 23. Lin-Watson further discloses said reaction time is used by said multi-player game at said server proxy to order responses by said players to thereby provide said fair exchange of messages (Lin, fig. 3, section 5, par. 3, SMS server proxy enforces a wait time for delivery of action messages based on received information).

65.   For claim 26, the claim is rejected for the same rationale as in claim 11.

66.   For claim 27, the claim is rejected for the same rationale as in claim 12.

67.   For claim 19, Lin discloses a method of providing a fair exchange of messages to

players of a distributed multi-player game taking place over a communications network,

said multi-player game generating update messages to said players and receiving

action messages from said players, said method comprising the steps of:

       receiving an update message from said game server at a player proxy (fig. 2, p.

3, col. 2, par. 2, sync_in, proxy SMS receives update messages from game server);

       recording reception time of said update message at said player proxy (fig. 2, time

of arrival of update message Ui is recorded); and

       calculating a reaction time using said reception time, said reaction time

transmitted by a player in connection with an action message (fig. 2, p. 3, col. 2, par. 2,

sync_in, reaction time is calculated as the time difference between the arrival of Ui and

the departure of Ai at a player station, fig. 3, delta times).

       Wherein said reaction time is used by said multi-player game to order responses

by said players to thereby provide said fair exchange of messages (fig. 2, p. 3, col. 2,

par. 2, sync_in, deliver A2 first because player 2 has faster reaction time)

       Lin uses synchronized clocks at said game server and said players because Lin

implements player action fairness or fair order based on real time occurrence or

physical clocks (1.1, par. 3). Lin does not disclose that fair order is without clock

synchronization among said game server and said players.

However, Watson discloses ordering of events can be done without clock synchronization among the server and players (col. 1 lines 14-21, ordering of events at remote locations when there are no synchronized clocks available)

Therefore, it would have been obvious for one skilled in the art at the time of the invention to modify the system of Lim's by ordering events (or reaction times) using event ordering with no clock synchronization of Watson therefore avoid the need of physical clock synchronization.

68.   For claim 20, Lin-Watson further discloses said player proxy sends an update message number, reaction time and action message number with an action message (Lin, fig. 2, fig. 4).

Conclusion

69.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu T. Hoang whose telephone number is 571-270-1253. The examiner can normally be reached on Monday-Thursday, 8 a.m.-5 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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HH

/Bunjob Jaroenchonwanit/

Supervisory Patent Examiner, Art Unit 2152